

the candidate's acquaintance with his subject, they have instructed the examiners to make the questions as practical as possible, and are endeavouring to secure the services of two examiners for each subject, one of whom at least shall be actually engaged in manufacture. At the same time it is interesting to notice that of those candidates who have not attended the ordinary registered classes, 47 in all presented themselves from University College, London; the Royal School of Mines; the Yorkshire College, Leeds; the Glasgow Technical College; the St. Mark's Technical College, Grosvenor Square; and from other similar Institutions; and of these 41 succeeded in passing, 23 in the first, and 18 in the second division, the percentage of failures being remarkably less among this than among any other class of candidates. Among changes in the technological examinations, all in the way of improvement, we may note that the subjects have been so arranged as to group together allied industries; examinations in electric lighting, the transmission of electrical energy, and electrical instrument making have been added; more sensible arrangements have been made as to the grades of the examinations; these and several other changes all tend to the efficiency of the examinations as real tests of the attainments of candidates.

From all this it seems clear that the Council of the Institute are impressed with the truth on which we have so often insisted in these columns, that there can be no efficient practice without sound principles, that instruction in the practical applications of science must be based upon a knowledge of the science which is applied, that instruction in the latter must precede instruction in the former, otherwise technical education is little better than the old empirical rule-of-thumb methods. Therefore we are glad to see, as the Lord Chancellor indicated in his speech at the laying of the foundation of the Central College last July, that the aim of the Institution will be to supplement the work of those institutions, especially the Science and Art Department, whose aim is to afford a knowledge of the principles of science and art. There is distinct evidence in the examinations of the new Institute of a gradual tightening of the tests, both for students and those who aim at being technical teachers. At the distribution of the prizes last December Sir Frederick Bramwell said that "the value of these certificates and prizes depends upon the thoroughness of the test that is applied, and it is in the interest of the certificate and prize-holders themselves that the standard of the examination should be maintained, in order that the value of the rewards may be duly appreciated. The Institute's certificates are intended to be regarded as diplomas of efficiency, and with this view they are awarded to those only who give evidence of possessing a practical as well as a theoretical knowledge of the subjects embraced by the examinations. Mere book-learning will not suffice to pass our examinations."

The City Companies have so far been wonderfully liberal in their donations to the Institute, but we hope those which have not contributed will take the advice of the Prince of Wales at the recent meeting, and lose no time in doing so. Compared with what has been spent in the Paris Conservatoire, the sum so far spent by the Institute has been a mere pittance; the City Guilds have ample funds at their command, and they could not spend

them on a better object, or one more likely to yield a rich return for the benefit of London and the country generally than in an institution that we hope one day will be comparable to that of Paris. The success already achieved is a guarantee that money devoted to the purposes of the Institute will be well spent.

The Council of the Institute are even already hindered in their work from want of funds; all over the country opportunities occur for starting technical schools in important industrial centres, but this requires a little expenditure on the part of the Institute, to encourage an adequate response from local sources. It would indeed be extremely useful if, in connection with some more of the numerous science schools of the Science and Art Department, a technical School were available for those who desired to learn some of the practical applications of the principles they had learned at the science school. This would greatly help to impress upon the public the natural order of connection between the two departments. In the arrangement for awarding the Holl Scholarships and prizes in connection with the Institute, this order is insisted on, for, among other qualifications of the scholars, they must have passed an examination in mechanics (or physics), mathematics, and chemistry, to the satisfaction of examiners appointed by the Institute. All this seems to us very encouraging; the Institute is yet young, and technical education in the real sense is in this country only a thing of yesterday; but if it be developed along the lines indicated by this report, there is every reason to hope that in time it will become an Institution of the highest national importance.

THE ART OF DINING

Aristology; or, The Art of Dining. By Thomas Walker, M.A. With Preface and Notes by Felix Summerly. 8vo. Pp. 96. (London: George Bell and Sons.)

Food and Feeding. By Sir Henry Thompson, F.R.C.S., &c. 8vo. (London: Frederick Warne and Co.)

THE two dinners which stand out in our memory as events in our life were of very different characters. The one consisted of brown bread and lard, washed down with some rough country wine, and was eaten in the middle of a Tyrolese glacier. The other embraced every delicacy the heart could wish. Our appreciation of the first was due to compulsory fasting for some time previously. Our appreciation of the second was due to its intrinsic merit. In it the dishes seemed to be so arranged that each one stimulated the palate for the one that succeeded it, and the wines given with each course were so selected as to increase the appetite for, and appreciation of, the solids. We then, for the first time in our life, began to realise that cookery was a fine art. In speaking of the fine arts we generally include only those which appeal to the special senses of sight and hearing, such as sculpture, painting, architecture, music, and we rarely think of modes of appealing to the special senses of smell and taste. Yet the latter two are perhaps quite as closely connected with our emotions as the former, and as capable of exciting keen sensations of pain and pleasure. Smell and taste differ from sight and hearing in being much more easily fatigued, and this may partly be the cause of their imperfect cultiva-

tion. Another cause is, probably, the closer connection which smell and taste have with the process of nutrition, and the consequent alterations which repeated impressions upon them may have upon the general well being. A man may pass long hours in a picture gallery or concert room, receiving impressions good, bad, or indifferent, without much effect upon digestion or circulation, but a bad odour would quickly excite nausea or sickness. The impressionable natures of Southern Italy object to strong perfumes, even though pleasant. The sense of taste differs in one particular from the other three, viz. that while the agents which excite them may remain outside the body, the substances which excite taste are taken into the body, and thus have an action upon it independently of their mere effect upon the sense itself. In gratifying this sense, therefore, we have to consider not merely what will give the greatest pleasure at the moment, but what will be most satisfactory in its after results. Fortunately, pleasure to the palate usually aids digestion, if obtained in the proper way; but comparatively few people know the art of dining properly themselves, and still fewer know how to give good dinners to their friends.

The two works before us are intended to supply this lacking knowledge, both by giving general rules and special examples. Walker's "Aristology" deals more with the general rules of dining, and especially of dining as a social duty, and Sir Henry Thompson more particularly with the details of food and cookery. In discussing food, the latter author makes some very sound remarks regarding the excessive amount of butcher's meat eaten by Englishmen, and its injurious consequences. In the working classes it leads to wasteful extravagance, although the manual labour which they have to undergo may lessen its deleterious effect upon their health. In the upper classes, where its price has but little effect upon the purse, its injurious action upon the body is increased by want of exercise, and tends, as the author truly says, to shorten or embitter life. The food of middle class Englishmen might be rendered not only much more palatable, but much more healthy, by the introduction of larger proportions of fish, vegetables, and farinaceous substances, as well as by greater variations in the modes of preparation. Both these subjects are well considered by Sir Henry Thompson.

The question of the best combination of dishes in a meal, and the arrangement of the meals, next engages the author's attention; and after this he discusses the question of wines, coffee, water, and tobacco, gives a scheme for a dinner, and a number of *menus* for different months in the year, finishing up with suggestions for the improvement of public dinners, and for the better teaching of cookery and supply of food throughout the kingdom. The contents of Sir Henry Thompson's book thus corresponds to its title, "Food and Feeding," and it gives the elements of the dinner. Walker's "Art of Dining" aspires to a higher gastronomic level. It is written in a series of most readable little essays, in which the directions which concern the kitchen are omitted, and the foods are discussed as they appear upon the table. The key-note of the book may be found in the little sentence, "The chief maxim in dining with comfort is to have what you want when you want it," and in order to attain this the writer shows how the attendants should be ordered, and

how the little adjuncts to the dishes should be arranged, so that no one shall have to wait for anything a moment after the desire for it has arisen. But more than this. It often happens that people do not know what to desire, and this the author tries to show them, by giving them illustrations of little dinners which he has had with his friends, and in which dishes and wines were so arranged in quantity and quality as to give the maximum of enjoyment. A puzzle in physics is the question whether a glass of water containing a cork would be heavier when the cork was fastened to the bottom of the glass or allowed to float on the water. The answer is that it would be heavier when the cork was at the top, because its place at the bottom of the glass would be taken by an equal bulk of water, which is heavier, and thus the attraction of gravity would act on the greater mass at the lesser distance. The author would apply a similar principle to the art of dining, and, instead of as usual keeping the delicacies until the last, when the appetite is palled by the previous dishes, he would give them first, when their enjoyment would be heightened by an excellent appetite.

"At a party of six persons, if the dinner consisted of soup, fish, a joint, and three woodcocks, I maintain it would be much better to serve the woodcocks before the joint, both on the score of enjoyment and of health—of enjoyment, because a delicacy, when the appetite is nearly satisfied, loses a great part of its relish, and is reduced to the level of plainer food whilst the appetite is keen—of health, because it is much more easy to regulate the appetite when the least tempting dishes are brought last. By serving delicacies first, people would dine both more satisfactorily and more moderately, and entertainments would be less costly and less troublesome."

This quotation may serve as an example of the book. To quote all that is worthy would be to transcribe the volume, and if it were read carefully and acted up to by every host, dinners would become a source of pleasure, instead of being, as they too often are at present, weary stale, and unprofitable.

OUR BOOK SHELF

Studies on Apus, Limulus and Scorpio. By E. Ray Lankester, M.A., F.R.S. (London: J. and A. Churchill, 1881.)

In these exceedingly clever memoirs we have a proof of how much can be made out of even well-known subjects by assiduous research, when combined with some speculative talents. The first memoir on *Apus cancriformis* is a valuable contribution to our knowledge of this most interesting Crustacean. The second on *Limulus*, an Arachnid, is even more interesting, and in its conclusions more startling, with it is combined a very elaborate comparison of the various systems of *Limulus* with those of *Scorpio*, and starting with the undoubted affinity of *Limulus* to the strange extinct *Eurypterina*, we have the suggestion that the *Merostomata*, including under this head the *Xiphosura*, the *Trilobita*, and *Eurypterina* diverged from the main stem of the Arthropod pedigree at a point between that indicated by the grade of organisation of *Peripatus*, and that occupied by the *Pro-Phyllopoda* or earliest Crustaceans, and it was in the time that these three great groups began to be formed, that each carried off with it some distinct evidence of their common departure.

The illustrations vastly assist in explaining the various technical details, and we are glad to see a large number incorporated in the text, thereby being rendered much